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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/901,581	07/09/2001	Takahisa Doba	ICC-222 CIP	4798

7590 06/30/2005

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EXAMINER

SELLERS, ROBERT E

ART UNIT	PAPER NUMBER
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1712

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/901,581	DOBA, TAKAHISA	
	Examiner	Art Unit	
	Robert Sellers	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 2, 8 and 9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-7 and 10-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 1-17 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

1. This application contains claims directed to the following patentably distinct species of the claimed invention:

- (a) The epoxy resins of claim 5.
- (b) The curing agent of claims 7-11.
- (c) The mono(thio)glycidyl (thio)esters within the structure of claim 1.
- (d) The cyanate esters of claim 4.
- (e) The compositions with and without the inorganic filler of claim 2, wherein if its presence is elected, a particular species is identified.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species within each of items (a) to (e) hereinabove for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claims 1-17 are generic.

A reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

2. During a telephone conversation with Steven C. Bauman on May 31, 2005, a provisional election was made without traverse to prosecute the following species embraced by claims 1, 3-7 and 10-17:

(a) Bisphenol F epoxy resin.

(b) Ancamine 2337S (a novolac epoxy resin modified with an aliphatic amine according to page 14, lines 3-5 of the specification).

(c) Glycidyl neodecanoate, or Cardura E10 according to page 14, lines 21-25.

(d) Arocy B-10 (2,2-bis(4-cyanatophenyl)propane).

(e) The absence of inorganic filler.

Affirmation of this election must be made by applicant in replying to this Office action. Claims 2, 8 and 9 are withdrawn from further consideration under 37 CFR 1.142(b) as being drawn to non-elected species.

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The following errors have been discovered in the specification:

3. The Ancamine 2337S is described on page 14, lines 3-5 as "a novolac-type resin that has been modified through reaction with aliphatic amines such as polyamines." However, the particular species is categorized as a modified amine compound which is "formed by the addition of an amine compound to an epoxy compound" according to page 13, lines 16-18. The novolac-type resin reactant would be more accurately disclosed as a novolac epoxy resin.
4. Page 14, lines 20-25 sets forth species of compounds within structure I including CAS Reg. No. 30499-70-8. Registry no. 30499-70-8 represents a triglycidyl ether of trimethylolpropane which does not fall within the ambit of the mono(thio)glycidyl (thio)esters of structure I.
5. The proper CAS registry number for Arocy B-10 is 1156-51-0 on page 15, lines 4-5.
6. The proper CAS registry number for Arocy L-10 is 47073-92-7 on page 16, lines 6-7.

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The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5, 11 and 13-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. The species of epoxy resins in claim 5, line 2 are not properly defined by the term "includes" in the absence of the proper Markush language "selected from the group consisting of."

8. The bisphenol A and bisphenol F epoxy resins, phenol and cresol novolac epoxy resins, and bisphenol A epoxy novolacs in claim 2, lines 2-4 and 10 are not concisely denoted by use of the word "type" which embraces modifications and derivatives not specified.

9. There is no clear line of demarcation between the bisphenol epoxy resins and the polyglycidyl derivatives of phenolic compounds in claim 2, lines 2-3 and 7-8, respectively, since the term polyglycidyl encompasses the diglycidyl ethers of the bisphenols.

10. There is no distinction between the phenol novolac, cresol novolak and bisphenol A novolac epoxy resins in claim 2, lines 3-4 and 10 as compared to the polyglycidyl derivatives of phenol-formaldehyde novolacs in line 9 since the latter term embraces the former three species.

Claims 11 and 15 contain the trade name Ancamine 2337S.

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11. Where a trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trade name is used to identify a source of goods, and not the goods themselves.

Thus, a trade name does not identify or describe the goods associated with the trade name. In the present case, the trademark/trade name is used to identify/describe a novolac epoxy resin that has been modified through reaction with an aliphatic amine. Accordingly, the identification/description is indefinite.

12. The novolac-type resins modified through reaction with aliphatic amines required in claim 13 is not clearly defined by use of the term "type" and the absence of indicating that the former reactant is a novolac epoxy resin as verified by page 13, lines 16-18.

13. The metes and bounds of the term "substantially" relied upon to characterize the insolubility of the amine compound derivatives in claim 14 are not clearly indicated.

What minimum level of solubility is within the realm of the term "substantially?"

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over PCT Publication No. WO 99/05196.

14. PCT '196 (page 14, Example 1) shows an underfill composition comprising 92% by weight of the elected species of a bisphenol F epoxy resin and a latent hardener component including 2-ethyl-4-methylimidazole and 4% by weight of a cyanate ester resin. Page 4, lines 26-35 describes the presence of up to about 20% by weight of a monofunctional epoxy resin such as a C₆-C₂₈ fatty acid glycidyl ester.

15. Although the claimed mono(thio)glycidyl (thio)ester of the structure is not exemplified, it would have been obvious to employ the C₆-C₂₈ fatty acid glycidyl ester of PCT '196 in order to adjust the viscosity or modify the crosslinking density.

Claims 1 and 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Nos. 11-106480, 10-287809 and 9-52941, Hino et al. Patent No. 6,469,074, Zhou et al. Patent No. 6,057,402 and Nguyen et al. Patent No. 5,912,316 *in view of* Shah Patent No. 5,541,283; the Modern Paint and Coatings article by Dante et al., the Proceedings of the Water-Borne and Higher-Solids Coatings Symposium article by Dante, Japanese Patent Nos. 6-184409 and 61-181870, The Plasticke Hmoty a Kaucuk by Fiala et al. and Stange Patent No. 3,714,112.

16. **Japanese '480** (translation, page 2, paragraphs 6-8 and page 4, paragraph 19, line 2), **Japanese '809** (translation, page 3, line 3, a monoepoxy compound, and page 4, paragraph 22 Example), **Japanese '941** (the abstracts and the translation, page 6, paragraph 30), **Hino et al.** (col. 3, lines 3-15; col. 4, lines 10-36 and 63;

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and col. 10, line 30), **Zhou et al.** (col. 2, lines 62-65) and **Nguyen et al.**

(col. 1, lines 55-60 and 64-67, disclosing from about 5 to about 80% by weight of a cyanate ester resin; and col. 5, lines 30-32 and 38-39, espousing up to about 30 parts by weight per 100 parts of the resin system of a diluent) report blends of epoxy resins, cyanate esters, curing agents and diluents.

17. The claimed mono(thio)glycidyl (thio)ester of the structure is not recited.

18. Shah (col. 1, lines 62-67; col. 2, lines 25-32 and 55-57; and col. 3, Table 1, Cardura E-10) and the Dante (et al.) articles teach the use of the elected species of glycidyl neodecanoate, or Cardura E-10 as a reactive diluent for epoxy resins to reduce the level of crosslinks (Shah) and to reduce the viscosity, increase the solids content, improve the dry time, hardness and AcOH resistance (Dante (et al.)).

19. Japanese '409 (translation, page 2, paragraphs 10 and 11; and page 3, paragraphs 18 and 19) describes the incorporation of from 20-60 wt% of a C₉-C₁₁ monoglycidyl ester to an epoxy resin with a curing agent to impart cracking resistance.

20. Japanese '870 sets forth glycidyl methacrylate as a reactive diluent for epoxy resin compositions combined with a latent curing agent.

21. Fiala et al. discloses the use of glycidyl benzoate as a reactive solvent for epoxy resins which become part of the cured structure and lowers the thermal stability without affecting the flexural strength and modulus, while bettering the impact strength.

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22. Stange (col. 1, lines 35-37 and col. 2, lines 45-46) reveals excellent viscosity control and improved tensile and flexural strength utilizing glycidyl acetate as an epoxy resin diluent.

23. It would have been obvious to use the glycidyl neodecanoate of Shah and Dante (et al.), the C₉-C₁₁ monoglycidyl ester of Japanese '409, the glycidyl methacrylate of Japanese '870, the glycidyl benzoate of Fiala et al. or the glycidyl acetate of Stange as the diluents for Japanese '480, '809, '941, Hino et al., Zhou et al. and Nguyen et al. in order to impart or improve the properties set forth in preceeding paragraphs 18-22 inherent in the particular monoglycidyl ester.

Claims 1 and 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese '409 and '870, Shah '283 and PCT Publication No. WO 98/31738 in view of PCT '196 and Chau et al. Patent No. 5,855,821.

24. Japanese '409 and '870, Shah and PCT '196 are described hereinabove. Japanese '409 (page 3, paragraph 19, line 5), Japanese '870 (latent curing agent) and Shah (col. 2, lines 47-48) set forth latent curing agents such as imidazoles. PCT '738 (page 5, lines 20-32) discloses a formulation prepared from an epoxy resin, a curing agent such as an imidazole (page 9, line 7) or a modified amine compound derived from the addition of an amine compound to an epoxy compound (page 9, lines 20-30 and pages 14-15, Example 1), and a C₆-C₂₈ fatty acid glycidyl esters (col. 6, lines 8-9). The claimed cyanate ester is not recited.

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25. PCT '196 (col. 6, lines 9-14) discloses from 0 to about 30 parts by weight per 100 parts by weight of an epoxy resin of a latent hardener component comprising an imidazole and containing from 0 to about 15 parts by weight of a cyanate ester and recognizes that "the presence of the cyanate ester component in the inventive compositions has a dramatic effect in maintaining a useful working life for the composition with respect to slowing viscosity increase over time at room temperature (page 16, lines 3-7)."

26. Chau et al. (col. 3, lines 21-40) teaches combining an epoxy resin and from about 10-70 wt% (col. 5, lines 3-5) of a cyanate ester to improve the moisture resistance and curing time.

27. It would have been obvious to combine the imidazole latent curing agents of Japanese '409 and '870, Shah and PCT '738 with the cyanate esters of PCT '196 and Chau et al. in order to enhance the working life, moisture resistance and curing time.

Claims 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references (except for Japanese '809 and '941 and Hino et al., Zhou et al. and Hino et al.) as applied to claims 1 and 3-7 hereinabove, and further in view of PCT Publication No. WO 98/31738 and the Journal of the Adhesive and Sealant Council by Shah.

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28. The primary references described in detail hereinabove recite mixtures of epoxy resins, cyanate esters and latent curing agents. The claimed epoxy-amine addition product of claims 10, 11 and 13 having the certain characteristics of claims 12 and 14 is not recited.

29. PCT '738 teaches the especial desirability of a modified amine compound derived from the addition of an amine compound to an epoxy compound for repairability.

30. Shah acknowledges the use of the elected species of Ancamine 2337S (penultimate IT, line 2) as a latent curing agent for epoxy adhesives offering rapid green strength development at low temperatures, excellent shelf stability and high glass transition temperatures for cured products leading to improved strength retention at elevated temperatures.

31. It would have been obvious to utilize the epoxy-amine addition product of PCT '738 and the Ancamine 2337S of Shah in order to impart repairability, rapid green strength development at low temperatures, excellent shelf stability and high glass transition temperatures for cured products leading to improved strength retention at elevated temperatures.

Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over PCT '196 as applied to claims 1 and 3-7 hereinabove, and further in view of PCT '738 and the Shah article.

32. Claims 15-17 are limited to the Ancamine 2337S curing agent and from about 0.5 to about 5% by weight of a cyanate ester along with an epoxy resin.

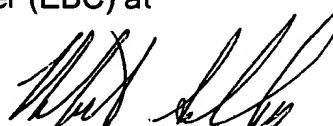
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33. PCT '196 (page 14, Example 1, lines 27-33) exemplifies an amount of cyanate ester within the claimed parameters with a latent hardener comprising an imidazole and cyanate ester. PCT '738 prefers the use of latent curing agents such as imidazoles or modified amine compounds wherein modified amine compounds obtained from the addition of an amine compound to an epoxy compound is especially desirable from the standpoint of repairability (page 9, lines 6-9 and 20-29).

34. It would have been obvious to employ the epoxy-amine addition product of PCT '738 such as the Ancamine 2337S of Shah together with the cyanate ester of PCT '196 in order to take advantage of the properties endemic to the epoxy-amine addition product including repairability, rapid green strength development at low temperatures, excellent shelf stability and high glass transition temperatures for cured products leading to improved strength retention at elevated temperatures.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Sellers whose telephone number is (571) 272-1093. The examiner can normally be reached on Monday to Friday from 9:30 to 6:00. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).



Robert Sellers
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